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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,808	09/17/2003	Ajay V. Patwardhan	130209.505	3462

500 7590 09/21/2007  
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EXAMINER

DINH, TUAN T

ART UNIT	PAPER NUMBER
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2841

MAIL DATE	DELIVERY MODE
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09/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/664,808

**Applicant(s)**

PATWARDHAN ET AL.

**Examiner**

Tuan T. Dinh

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

Claim 16 is objected to because of the following informalities: claim 16, line 10, change "terminalsof" to - -terminals of - - for proper typing error. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Rinechart et al. (U.S. Patent 6,359,331).

As to claim 16, Rinechart et al. discloses a power switching module as shown in figures 2-4, comprising: a substrate (a substrate of element 32) received in a first housing, the substrate comprising a number of regions; first and second DC bus bars (58) comprising first and second set of terminals, and received at least partially in the first housing with the first and second set of terminals accessible from an exterior thereof respectively; a number of switches (TR1, TR2) mounted to at least some of the regions of the substrate and electrically coupled to one another to form a bridge circuit

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electrically coupled between the first and the second DC bus bars (58); first and second film capacitors (Cb, Cd) electrically coupled across the terminals of the first and the second DC bus bars (58).

As to claims 17-18, Rinechart et al. discloses the first and second film capacitors are disposed in the exterior of the first housing.

As to claims 19-20, Rinechart et al. further comprising: first and second DC interconnects, the first interconnect does electrically coupling the anode of the first and second film capacitors; and the second DC interconnect electrically coupling a cathode of the first capacitor to a cathode of the second film capacitor, and further comprising: a second housing receiving the first housing, the first film capacitor and the second film capacitor.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8, and 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rinechard et al. (U.S. Patent 6,359,331) in view of Huber et al. (U.S. Patent (U.S. Patent 6,147,882).

As to claims 1, and 21-23, Rinechart et al. discloses a power switching module as shown in figures 2-4, comprising:

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a housing (a body of the module);

first and second DC bus structures (46, 48); the second DC bus structure electrically isolated (by an insulator material) from the first DC bus structure;

a circuit (TR1, TR2, 12, 14, 16, 18, and 20) electrically coupled between the first and second DC bus structures (58);

a high frequency capacitors (Cb, Cd) suitable for filtering, each comprising an anode and a cathode, the anode electrically coupled to the first DC bus structure (58) and the cathode electrically coupled to the second DC bus structure (58).

Rinechard et al. does not specific disclose the capacitor, which is a bulk capacitor suitable for handing load variation and filtering. Huber et al. shows a converter (100) as shown in figures 1-3 comprising a bulk capacitor (104) having electrodes connected to the converter (100). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a teaching of Huber et al. employed in the power converter of Rinechard in order to control a converter through entire of voltage and load ranges.

As to claim 2, Rinechart et al. as modified by Huber et al. discloses the first and second DC buses structures (58) comprising first and second DC bus bars having a number of terminals and wherein the housing comprises a lead frame (44), the lead frame supporting the first and the second DC bus structures.

As to claim 3, Rinechart et al. as modified by Huber et al. discloses the first and the second DC bus structures (58) are received in the housing with at least one

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terminal of each of the first and the second DC bus structures extending from the housing.

As to claim 4, Rinechart et al. as modified by Huner et al. discloses the circuit comprises a number of semiconductor switches (TR1, TR2) and a number of semiconductor diodes (14) electrically coupled as a bi-directional converter circuit.

As to claims 5-8, Rinechart et al. as modified by Huber et al. discloses the high frequency and bulk capacitors (Cb, Cd, see figure 2) wherein each of the capacitors is a film capacitor or an electrolytic capacitor.

As to claim 10, Rinechart et al. discloses a power switching module as shown in figures 2-4, comprising: a first housing (upper part (32); first and second DC bus bars (58), each of the bus bars (58) comprising a number of terminals, at least a portion of the first DC bus bar (58) and the second DC bus bar (58) received in the first housing with the terminals accessible from an exterior of the first housing; a bridge circuit (TR1, TR2) received in the first housing and electrically coupled between the first and the second DC bus bars (58); high frequency and capacitors (Cb, Cd), each of the capacitors comprising anode and cathode, the anode electrically coupled to at least one terminal of the first DC bus bar and the cathode electrically coupled to at least one terminal of the second DC bus bar. Rinechart et al. does not specifically disclose the capacitor, which is a bulk capacitor. Huber et al. shows a converter (100) as shown in figures 1-3 comprising a bulk capacitor (104) having electrodes connected to the converter (100). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have a teaching of Huber et al. employed in the power

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converter of Rinechart in order to control a converter through entire of voltage and load ranges.

As to claim 11, Rinechart et al. further comprising: a second housing (a lower part 30) receiving the first housing, the bulk and high frequency capacitors.

As to claim 12, Rinechart et al. further comprising: a gate driver board (34, figure 4) physically coupled to the first housing.

As to claim 13, Rinechart et al. discloses the terminals of the first and the second DC bus bars (58) extend through apertures formed in the gate driver board and the high frequency capacitor is adjacent the gate driver board.

As to claim 14, Rinechart et al. discloses the high frequency capacitor overlies at least a portion of the first housing.

As to claim 15, Rinechart et al. discloses the second housing (power part containing element 30) comprises a cold plate (34) with an inlet aperture and an outlet aperture for cooling of the cold plate.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rinechart and Huber et al. , and further in view of Aker et al. (U.S. Patent 6,803,746)

Regarding claim 9, Rinechart et al. as modified by Huber et al. does not specific disclose the values of each of the capacitor having capacitance of 500  $\mu$ F and 800  $\mu$ F.

Aker shows a fast charger for high capacity batteries comprising a capacitor having a value of 750  $\mu$ F.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have capacitors as taught by Aker et al. employed in the module of Rinechart and Huber et al. in order to the minimum capacitance necessary to achieve maximum allowable ripple at full power.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T. Dinh whose telephone number is 571-272-1929. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reichard Dean can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
TUAN T. DINH  
PRIMARY EXAMINER

Tuan Dinh  
September 15, 2007.

